Book Reviews.

A MANUAL OF DISEASES OF THE NERVOUS SYSTEM. By W. R. GOWERS, M.D. Second Edition. Vol. I. Diseases of Nerves and Spinal Cord. Philadelphia: P. Blakiston & Co.

New editions as a rule do not mean exactly a complete revision, and one hesitates to trust blindly to the fact, as in the present day medical works are prolix, and medical libraries expensive, and duplicates are not a desideratum.

The first edition of the present work soon became exhausted, and it behooved the publishers to hasten this second edition.

This has been delayed, for the author has, as he expresses it in the preface, thoroughly revised it.

It has been increased by about 150 pages. For instance, whole section on Multiple Neuritis—additional matter nearly fifty pages; new chapters on Endemic Neuritis, Malarial Neuritis, Beri-Beri, and Leprous Neuritis, Brachial Neuritis, Senile Paraplegia, Morvan's Disease, and Peroneal Type of Muscular Atrophy. Additions and corrections are made throughout the book.

New plates are added as well.

We wait the appearance of the second volume with interest, and in its complete form trust to be able to say: By far the best work on the Nervous System published.

THE INTRA-CRANIAL CIRCULATION AND ITS RELATION TO THE PHYSIOLOGY OF THE BRAIN. By James Cappie. Edinburgh. James Thin, publisher.

Dr. Cappie, in his work on the "Intra-Cranial Circulation," has given us a very interesting and suggestive *résumé* of the subject. It is rather a philosophical discussion of the function or action of the brain than an anatomical description of its blood supply.

He has apparently not attempted to do other than place before us the usual and accepted idea of its circulation, which, however, is given in a clear and very satisfactory manner. From the title one might expect perhaps some wide discussion, especially of the minute vascular supply to the special segments of the brain; but in this we are disappointed. In his first chapter on the Philosophy of Physical Causation, his philosophy prescribes three factors—first, matter; second, energy; and, third, motion.

The first and third we must necessarily admit, otherwise there is nothing for us to fix in the realm of thought; the second, energy, or that force which moves matter and effects motion, we must accept, otherwise we cannot understand motion. Causation cannot be considered without some form of energy. Every factor which enters into a change in the character of this energy is a part of the cause. The author does not go deeply enough into the subject to allow of much criticism.

In his second chapter on the Connection of Mind and Brain, he accepts, if I understand aright, the brain as the organ of the mind. As he very truly says: Every form of mental action has its somatic side. This does not explain the connection between the molecular activity of the brain and activity of thought and volition. The writer is suggestive but not explanatory, but this is due to the subject; for while we can all admit that the brain is the organ of the minds, as, pathologically, its disease produces certain changes in normal feeling, thought, and action, and also in the realm of consciousness, still we are to-day even with our enlarged knowledge of the cerebral structure as far removed as ever from any understanding of what function of the brain renders special mental action, or, indeed, in what exact part of the brain mentality is located.

The third chapter on the circulation itself I have already referred to, including the one on Capillary Circulation. There is nothing added to our already accepted facts.

In Chapter V., on the Uniform Mass of the Blood within the Cranium, I would take issue.

He has run up against the old wall that the circulation in the brain cannot be altered to any large extent, owing to the fixed rigidity of the cranial vault. As he truly says, physiologists have for some time considered the theory as an exploded one.

He does not admit that the cerebro-spinal fluid can act as a most important medium in regulating and allowing for an increase or decrease in the blood supply to the brain, maintaining by its presence or absence an equable pressure on the cerebral substance in all conditions within its physiological limits. He maintains that there is very little fluid that can accumulate either in the arachnoid cavity or that can pass into the spinal cord, *i. e.*, between it and the dura, maintaining that the rigidity of its walls, acts almost as does the cranial vault. He also thinks that should this transfer take place rapidly, that the ascent of the cerebro-spinal fluid to the brain would float it upward, tearing, or at least putting great traction on the cranial nerves at the base.

He seems to forget that it has a clean course through the ventricles which connect directly with the arachnoid and perivascular spaces, and that on the very principle that a vacuum cannot exist in nature, the attraction toward these places of least pressure is very strong.

In a paper on Cerebral Compression, which is unpublished, although read, I had occasion to study this very subject. As Dr. Cappie says, the cerebral contents can be considered as consisting of brain substance, blood, and cerebro-spinal fluid.

The most compressible is the last and easiest to transfer from part to part, which indeed, to my mind, seems its main function, providing the brain a cushion to rest on and within certain limits preventing compression.

Passing to the chapter on Sleep, while he accepts the idea that cerebral anæmia is probably present, as shown in the decreased size of the arteries and the increased size of the veins in the retina and also in the brain substance when observed, he holds that an additional factor is the compression produced by these distended veins in the brain itself—the pia mater, as he particularly expresses it, "during sleep soothing to rest by a closer embrace."

This, however, is not the cause of sleep, but a condition found in sleep.

In normal sleep we have an absence of consciousness more or less complete, due to the fact that no impressions are sent to the cortex, or else are not received if sent.

Consciousness implies a constant receipt of impressions from the outside world, or a revival or memory of those formerly received. Shut out all sensory impressions from the special senses to sensory nerves and consciousness must be lost. As a consequence truly we find decreased vascularity of the cerebral receiving centre.

To hasten on to the final chapter on "Some Points on Mental Physiology," I agree that in specialized mental action in all probability an increased blood supply is demanded by that part as in any other organ when it is in active function. I scarcely think, however, our knowledge of the functions of the brain permit us as yet to look upon it as consisting of several distinct organs, which in their separate activities withdraw, at least to any extent, the blood supply from other parts, rendering them anæmic and subject to inhibitory influences from the more active organ. Our knowledge of the cerebral circulation as a whole scarcely warrants such an assumption.

In closing this diffuse and inadequate criticism of a really very suggestive, if not original work, I would say one word in regard to the generally accepted theory of cerebral action which we owe to Hughlings-Jackson. To consider cerebral action, whether in a physical or psychical direction, as the freeing of pent up forces or as an explosion, is erroneous. We do not consider other organs as in a constant state of tension, waiting only to be relieved of this tension by being called into active function, nor should we so regard the cell action of the brain. It is constructed to send its forces when properly stimulated into certain channels, either, in brief, of thought or action. Like all organs, it is never absolutely quiescent, while at times it is especially active.

The only occasion when the idea of an explosion is at all appropriate is perhaps during an epileptic seizure, and even then the idea called forth is too mechanical to be held in reference to any living tissue subject to vital changes.

EDWARD D. FISHER.